



Michigan Department of Agriculture

Generally Accepted Agricultural and Management Practices for the Care of Farm Animals

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GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR THE CARE OF FARM ANIMALS

OVERVIEW

These voluntary Generally Accepted Agricultural and Management Practices (Practices) are intended to be used by the livestock industry and other groups concerned with animal welfare as an educational tool in the promotion of animal husbandry and care practices. The recommendations do not claim to be comprehensive for all circumstances but attempt to define high standards for livestock production and well-being in commercial and farm operations. These Practices can serve producers in the various sectors of the livestock industry to compare or improve their own managerial routines. It should be understood that new scientific discoveries and changing economic conditions may make necessary revision of the Practices.

Proper animal management is essential to the well being of animals and the financial success of livestock operations. A sound animal husbandry program provides a system of care that permits the animals to grow, mature, reproduce and maintain health. Specific operating procedures depend on many objective and subjective factors unique to individual farm operations.

Animal well-being is a function of many environmental variables, including physical surroundings, nutrient intake and social and biological interactions. Environmental conditions should minimize disease, death loss and behavioral problems and enhance performance. Particular components of the environment that should be managed include housing, space concentrations, pests, nutritional factors and water. Domestic animals readily adapt to a wide range of environments.

Sometimes procedures that result in temporary stress and even some pain are necessary to sustain the long-term welfare of the animals. Some of these procedures reduce aggressive behavior and injuries among animals. These practices have developed over generations of animal care and husbandry and include but are not limited to; beak-trimming, dehorning, tail docking and castration of males. Various humane techniques are available, but at present, no technique can be recommended as ideal under all circumstances for any species.

The livestock industry is involved in many activities that require the movement of animals. The handling of livestock in shows, exhibitions, fairs, and races should always be done with primary concern for handler, public, and animal safety. Animals need to be humanely trained, shown, and exhibited using safe and non-harmful devices and procedures.

GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR BEEF CATTLE, BISON AND LLAMA

MANAGEMENT OVERVIEW

Because of similarities among production practices between beef cattle, bison and llamas, Generally Accepted Agricultural and Management Practices (Practices) for care of these animals will be similar in many cases. Genetic variation among cattle species, breeds and individuals makes it possible for them to thrive in a wide range of natural conditions and artificial environments. When behavioral and physiological characteristics of cattle are matched to local conditions, beef cattle thrive in virtually any natural environment in Michigan without artificial shelter. Protection, however, may be beneficial, especially for newborns, during adverse weather conditions. Cattle reside on pastures and woodlots, in small drylot facilities, in a variety of different types of feedlots, and in confinement.

MANAGEMENT PRACTICES

Nutrition: Feed and water should be presented to cattle in ways that minimize contamination by urine, feces, and other materials. Feedbunks, where used, should be monitored and kept clean. Animals should be fed and watered in a manner consistent with one of the following publications: Nutrient Requirements of Beef Cattle (National Research Council, 1984 or 1996), Animal Breeding and Production of American Camelids (Escobar, 1984) and Buffalo Management and Marketing (1983).

Cattle may vary considerably in body weight during the course of grazing and reproductive cycles. Feeding programs should make it possible for animals to regain the body weight lost during the normal periods of negative energy balance. Cattle, bison and llamas should have frequent access to a source of water. When continuous access to water is not possible, water should be available for 30 minutes at least twice daily, or more frequently depending on weather conditions, amount of feed consumed, and level of production of the animals.

Manure Management and Sanitation: Manure management should conform to the recommendations presented in the Right to Farm Practices. Midwest Plan Service (1987a) has a publication on recommended waste handling facilities. For the pasture based systems, manure management and sanitation are less of a concern but care should be taken to protect surface waters and prevent erosion.

For additional information, see the Structures and Environment Handbook (Midwest Plan Service, 1987) and the Beef Housing and Equipment Handbook (Midwest Plan Service, 1995).

HEALTH CARE AND MEDICAL PROCEDURES

Adequate health care is an essential part of a profitable beef cattle operation. A health care program should be planned to address potential problems as appropriate for local conditions. Appropriate health care involves: 1) methods to prevent, control, diagnose, and treat diseases and injuries; 2) training and guidance to animal caretakers on appropriate antibiotic therapy; 3) instruction on proper handling of pharmaceuticals and biologicals and withdrawal times and 4) adequate record keeping systems. All confined animals should be observed daily for signs of illness, injury, or unusual behavior.

Methods of prophylaxis, diagnosis, therapy, and disease control should follow currently accepted practices. Assistance from a veterinarian in establishment of a health care program is recommended.

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GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR SWINE¹

MANAGEMENT OVERVIEW

In Michigan, swine can be raised humanely in a variety of production systems, provided they are given ample protection from extreme cold, excessive wind, solar radiation, and precipitation. Production systems used include (1) environmentally controlled buildings in which the pigs remain inside, (2) open-front buildings that permit the pigs to go outside, and (3) outside lot or pasture production with portable shelters. Good quality facilities and sound management skills optimize animal comfort and well-being regardless of the type of production system. The swine care practices described herein are relative to all types of swine production (e.g. commercial, hunting, companion animal).

MANAGEMENT PRACTICES AND TRANSPORTATION

Observation: Pigs should be observed routinely and more frequently during farrowing, postsurgical recovery, or recovery from illness. During observations, waterers and feeders should be checked to make sure pigs have access to both feed and water. Pigs should be examined for signs of health problems, physical discomfort, or injuries. Facilities need to be inspected to be sure they are functioning properly. Producers need to be aware of these responsibilities during normal work hours, nights, and weekends.

Identification and Records: Pigs generally have some form of identification that can be easily read. These identification methods may include ear notches, ear tattoos, electronic transponders, ear tags, or pen recognition. Identification is important to maintain records and track pigs as they are moved through the various production phases. Many different types of management records may be kept depending on the type of production system (medical, production, genetic selection programs, nutritional, and facility).

Baby pig care: After birth, any of the following procedures may be performed on piglets by a skilled individual to help reduce the risk of disease and infections: (1) disinfection of navel, (2) clipping of needle teeth, (3) supplementing iron by injection or orally, (4) docking of tail, (5) identifying permanently and (6) castrating males.

Nutrition: Swine are raised on a variety of feeds. Feedstuffs should be free from harmful molds, mycotoxins, or impurities; of the presence of any of these substances or organisms are suspected, samples should be submitted for laboratory testing. Feed with unrecognized nutritional value and lacking in wholesomeness should not be used.

¹Condensed from Swine Care Handbook, National Pork Producers Board, 2003.

Transportation: Injuries and bruises can result in carcass damage when pigs are improperly managed during handling and transport. Recommendations of facility design for loading and unloading trucks, restraining animals, and handling them in packing plants have been published (Grandin, 1983, 1988, 1991).

Weak pigs should not be loaded or transported with healthy ones. Appropriate steps should be taken immediately to segregate sick pigs and care for their special needs.

When pigs are transported, ventilation should be adequate and the floor should be slip-resistant. When possible, animals should be shipped in groups of uniform weight and provided with adequate space. (Grandin, 1988; Grandin, and Shultz-Kaster, 2001).

Transport and handling stresses can be aggravated by adverse weather and wide temperature fluctuations. Hot weather is a time for particular caution. While in transit in warm weather, pigs should be protected from heat stress by being shaded, wetted, and bedded with wet sand or shavings. Prompt unloading in hot weather is essential because heat builds up rapidly in a stationary vehicle.

During transportation in cold weather, pigs should be protected from cold stress. Wind protection should be provided when the air temperature drops below 32°F, but ventilation must always be adequate. When trucks are in transit in cold weather for more than a few minutes, pigs should be bedded with chopped straw or other material that has high insulating properties. Water and feed should be readily available for long trips as described in Federal Regulations.

Truck beds should be clean and dry and equipped with a bedded, non-slip floor.

RECOMMENDATIONS FOR THE ENVIRONMENT

Environmental considerations in pork production operations must include the well-being of the pigs, the protection of air and water quality, and the work environment of the producer, and employees.

Social: All classes and groups of pigs form an order of social dominance. These orders are formed by competition soon after birth or when the pigs are first grouped together. Addition of new pigs or regrouping of pigs will usually lead to struggles until a new social order is established. Regrouping of pregnant females should be avoided in early pregnancy to prevent potential harm to unborn pigs. Adult boars that have not been living together should not be regrouped unless special precautions are taken to prevent possible injury from fighting.

Females can be bred to farrow at any time of the year. Three mating options are: (1) pen mating (placing a boar with a group of sows without observation of matings), (2) hand mating (attended matings with one boar and one sow in a pen), and (3) artificial insemination (utilizing semen collected from boars).

should be controlled so that they do not create air quality problems in or around buildings. Acceptable air quality can usually be achieved with proper ventilation and air distribution, regular cleaning and sanitation, feed dust control, and manure gas control.

Photoperiod: Lighting should give enough illumination to permit practicing good husbandry, inspecting the pigs adequately, maintaining their well-being, and working safely (MWPS, 2002). Compared with some species, the domestic pig is less sensitive to its environmental lighting and no particular daily photoperiod is necessary.

FACILITIES AND EQUIPMENT

Swine housing systems may be as simple as a fenced pasture with no man-made shelter, or they may be much more complex. Whatever the system, it should be appropriate for the age of the pigs and the local climate. In enclosed structures, the system should be capable of maintaining environmental conditions within an acceptable range. Descriptions of cold and warm housing systems have been given by the National Pork Board (2005).

Swine facilities should conform to applicable building codes unless deviations and variances are justified and approved. Physical facilities should be well maintained and clean. Facilities and equipment should be inspected, repaired, and maintained regularly to provide a safe environment for animals and people. The MWPS publications, the Pork Industry Handbook (2003), and publications of other organizations provide guidance for planning, specifications, cost estimates, and construction of commercial agricultural swine facilities in different parts of the U.S.

Feeders and waterers: Feeders should provide adequate access to feed. The design of the feeder should take into account the eating stance and size of the pig using it. Feeders should be cleaned regularly to prevent feed accumulation and spoilage, and be maintained with no rough edges to injure the pigs. Waterers should be positioned to ensure pigs have adequate access. Flow rates should be such that pigs can easily meet their water intake requirements.

HEALTH CARE AND MEDICAL PROCEDURES

Adequate health care is an essential part of a pork production enterprise. Appropriate health care involves: methods to prevent, control, diagnose and treat diseases and injuries; training of and guidance to animal caretakers on antibiotic therapy; instruction on proper handling of pharmaceuticals and biologicals and withdrawal times; and adequate record keeping programs. Animals should be observed daily for signs of illness or injury.

Methods of prophylaxis, diagnosis, therapy, and disease control should follow currently accepted practices. Assistance of a veterinarian in establishment of a health care program is recommended.

Stevermer, E.J., 1991. 1990 Swine Enterprise Record. ASB:EJS-185. Iowa State University, Ames, IA.

Each group of heifers should be fed a balanced ration (NRC 2001) to maintain adequate growth.

Underfeeding delays normal heifer development. Overfeeding may result in overly fat heifers that may cause health problems at first calving.

Heifers may be bred upon reaching an adequate size and weight (Raising Dairy Heifers For More Profit). Use of artificial insemination or natural service (bull) is an acceptable practice to breed heifers and/or cows.

Proper management of the lactating cow starts during the dry period. Since approximately 70% of health problems in a dairy herd are associated with calving, proper management of precalving, calving and post calving periods will improve the health of mother and calf. An environment should be provided for bred heifers and dry cows that keeps the animals clean and dry. In addition, a good nutrition program that maintains appetite and feed intake should also be provided.

Nutrition programs for dairy cows should provide for adequate intake of the essential nutrients needed for maintenance, growth, milk production and proper development of the fetus (NRC 2001). Grouping cows according to nutrient needs will improve the odds of meeting the requirements of any particular cow. Good quality, fresh water must be available at all times.

Cows benefit from a dry period prior to a subsequent lactation (Managing the Milking Herd for Profit). Restricting feed and water intake a few days prior to dry off are acceptable practices that will aid cessation of milk secretion and improve udder health.

Nutrition for the majority of dry cows should be a maintenance program according to NRC requirements (NRC 2001). Nutrition and housing needs will change 2-3 weeks prior to calving as outlined previously.

TRANSPORTATION

Safety and comfort of dairy cattle should be the primary concerns in their transportation. Weak and unhealthy animals should be separated from healthy animals during transport. Animals should be provided with adequate ventilation and a floor surface to minimize injuries. Recommendations on facility designs for loading and unloading trucks are available (MWPS 2000, Caring for Dairy Animals Reference Guide). Transport and handling stresses can be aggravated greatly by adverse or rapidly changing weather conditions.

ANIMAL HANDLING AND RESTRAINT

Facilities designed specifically to handle dairy cattle, including bulls for AI, hand mating, health checks or treatment, vaccinations, weighing, or hoof trimming will decrease risk of injury to cattle and people as well as reducing the stress of handling. All traffic areas should have non-skid surfaces that avoid causing excessive hoof wear. A number of restraint devices are acceptable, such as halters, hobbles, breeding chutes, squeeze chutes, headlocks, tables and stanchions. Restraint should be the minimum necessary to control the animal and ensure the safety of attendants. Proper design of the handling facility will facilitate animal movement.

HEALTH CARE AND MEDICAL PROCEDURES

Proper care of dairy animals includes the establishment of a herd health program that covers all ages of cattle and emphasizes disease prevention. Dairy farmers should establish a valid veterinarian/client/patient relationship with a licensed veterinarian to assist them in providing proper health care to their herd. A herd health program should include proper ID of all cattle and accurate records.

Suggested husbandry procedures such as castration, dehorning, removal of extra teats, etc. should be carried out by skilled personnel. These procedures are best done when calves are small, but may be done at other times. All procedures should follow the veterinarian's recommendations or accepted management practices. These techniques can be done with little discomfort to calves, heifers or cows (Seykora, 2nd Edition).

Health programs for heifers are designed to prevent disease and increase efficiency of growth. Heifers should be vaccinated against diseases as deemed necessary by the herd veterinarian.

Health programs including vaccinations for dairy cows are an extension of the heifer program. External and internal parasites need to be controlled. Pasturing may increase risk of internal parasites and will increase exposure to diseases carried by wild animals. An ongoing preventive herd health program designed for each farm by the veterinarian and farmer will result in healthy cows.

REFERENCES

Calves, Heifers and Dairy Profitability: Facilities, Nutrition and Health. 1996, Proceedings – Calves, Heifers and Dairy Profitability Conference, Harrisburg, PA Jan. 1996. Northeast Regional Agricultural Engineering Service-74.

Caring for Dairy Animals, On Farm Evaluation Guide. 1994. Milk and Dairy Beef Assurance Program, Agri Education, Inc.

Caring for Dairy Animals, Reference Guide. 1994. Milk and Dairy Beef Quality Assurance Program, Agri Education, Inc.

GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR EQUINE

MANAGEMENT OVERVIEW AND HUSBANDRY SYSTEMS

The equine industry in Michigan is large and diversified. Management systems include: Breeding farms; training facilities; show, exhibition, and racing enterprises; mare and foal operations; transportation companies; horses used for work on farms or for transportation; boarding stables, pleasure horse operations and riding stables. Equine management systems include operations with only a few animals to those with several hundred on one premises. The industry has state-wide distribution and the various components are integrated to provide specialized services. The show and racing operations accommodate horses throughout the country, therefore, a large number of horses are transported into and out of this state on a regular basis.

The seasonal changes and climate extremes of this state present possible management and health problems, which need to be considered and managed. Housing and pasture systems may vary and be modified to meet the needs of the enterprise, to use existing facilities, and to be economically feasible. Emphasis on safety and minimizing stress, are important factors when transporting one or several horses. Herd health, disease prevention and emergency care programs should be individually developed and implemented for each equine operation. These programs need to be reviewed and modified as disease potential and needs change. Since horses are athletes and perform different tasks, nutritional programs need to meet the growth and performance requirements of each horse.

Federal and state laws concerning horse protection, animal cruelty, riding stables, and sale barns need to be understood by the industry, complied with, and enforced.

MANAGEMENT PRACTICES (INCLUDING TRANSPORTATION)

Nutrition: Proper nutrition is important in maintaining health. Nutritional demands vary depending on age, size and use. The amount and composition of feed required is governed by body weight, individual metabolism, age, pregnancy, lactation and the amount of work the animal does. Horses need to be adequately fed to maintain their body weight and health; however, idleness, overfeeding and obesity are undesirable and often harmful. Horses are kept for a much longer time than most farm animals, and feeding programs should support the development of sound feet and legs that will sustain a long and athletic life.

Shows Association Rule Book 1994-1995, and American Quarter Horse Association Official Handbook, 1995) has developed and shall be in compliance with the Federal Horse Protection Act and Michigan cruelty to animals laws.

RECOMMENDATION FOR ENVIRONMENT

Proper illumination in barns and indoor riding arenas are important for the convenience and safety of both the horse and the attendant.

As a rule, horse owners can obtain adequate housing for their horses with uninsulated buildings. In northern regions, insulated buildings and supplemental heat are more commonly used to protect the animals and attendants from severe winter weather. Healthy horses with adequate diet and good body condition only require protection from the wind. Heated barns may be used for show horses to keep them in show condition throughout the year. Overcrowding should be avoided to minimize injuries and parasite problems.

Pastures should have adequate shelter where horses can get out of the sun, wind, rain, and other inclement weather. These may include, but are not limited to, open barns, lean-to's, constructed windbreaks and woodlots. There should be enough space to accommodate all animals comfortably. Riding stables licensed by Michigan Department of Agriculture are required to have constructed shelters per R285.154.5.

If horses are confined to small spaces, manure should be stored away from the horse housing to decrease fly and parasite exposure. The manure should be stored, transferred and utilized in compliance to practices outlined by the GAAMP for Manure Management and Utilization.

FACILITIES AND EQUIPMENT

The basic purpose of horse housing is to provide an environment that protects the horses from temperature extremes, keeps them dry and out of the wind, eliminates drafts through the stables, provides fresh air in both winter and summer and protects the horses from injury. See reference section for more information on general housing requirements.

In cold uninsulated or insulated barns, fresh air is usually provided by natural air movement through wall openings and ridge vents or devices. Examples of wall openings may be small windows, wall panels or slots under the eaves. In tight, warm barns, fans, and spaced air inlets may be necessary. Adequate air exchange and distribution should be provided to remove moisture generated within the barn. If using supplemental heat, adequate ventilation will be required. Adequate air exchange and air distribution systems to provide adequate cooling should be provided during hot weather.

Bands of horses may be housed in open sheds. If halters are left on in the pasture, they should be of a material that will break if the halter becomes caught on an object. (i.e., breakaway or thin leather halters).

Where animals are housed for any lengthy period, clean bedding should be provided. Animals should be provided with daily exercise to maintain healthy skeletal – muscle system and reduce behavioral problems. Daily exercise could be in the form of free exercise provided by turnout or forced exercise like lunging or riding for at least 30 minutes per day.

HEALTH CARE AND MEDICAL PROCEDURES

Disease and injury prevention can best be achieved through nutritional management, adequate housing, vaccination programs, parasite control, cleanliness and general equine husbandry in consultation with a veterinarian.

A healthy horse is active, and drinks readily, has clear eyes and nose, a clean skin and a good general body condition without being excessively fat. A moderate body condition score of 4.5 – 6.5 ensures adequate energy reserves without excessive weight that could predispose a horse to nutritional or skeletal problems. The health of the horses should be routinely assessed to recognize appropriate signs of illness, so that care may be instituted. Management plays a major role in the prevention of disease and injury.

A proper preventive vaccination program should be developed for individual horse needs. Effective vaccines are available to protect horses from fatal diseases including: tetanus, encephalomyelitis and rabies. The manufacturer's and/or veterinarian's recommendations should be followed for all vaccines.

Internal parasitism is one of the most serious of all equine diseases. Parasitism is associated with general unthriftiness, poor hair coat, and a high incidence of colic. Stable and pasture management can be helpful in parasite control. A parasite control program should be developed and implemented for all horses.

Horses' teeth should be examined periodically and floated when necessary. Elongated enamel points on the teeth can cause trauma and constant irritation and result in improper chewing. Excessive salivation or dropping of feed from the mouth indicate the mouth should be examined and may indicate that dental care is needed.

Proper foot care is essential to maintain normal health of the foot and to prevent lameness. The hooves should be examined regularly and trimmed or shod as needed. For stabled horses, clean, dry bedding should be maintained. Excessive dryness of the hoof should be avoided.

FACILITIES AND EQUIPMENT

Farm Production and Practice, Horses: Welfare, Code of Minimum Standards, Ministry of Agriculture and Fisheries, P.O. Box 2526, Wellington, New Zealand: 1988.

Disease-Management Interaction: Horses, The Merck Veterinary Manual, Sixth Edition, 1051-1052: 1986.

Horse Handbook Housing and Equipment, Midwest Plan Service, Michigan State University, East Lansing, Michigan, 1, 3, 4, 13, 15, 17, 18, 31: 1986.

HEALTH CARE

Disease-Management Interaction: Horses, The Merck Veterinary Manual, Sixth Edition, 1051-1054: 1986.

SUPPLEMENTAL REFERENCES

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Rations for Light Horses, Cooperative Extension Service, Michigan State University, Extension Bulletin E-919, September 1975.

Housing Your Pleasure Horse, Cooperative Extension Service, Michigan State University, Extension Bulletin E-1403, June 1980.

Horse Buildings and Equipment: A catalog of plans, Cooperative Extension Service, Michigan State University, Extension Bulletin E-1057 SF3, April 1977.

Producing Hay and Pasture for Horses in Michigan, Cooperative Extension Service, Michigan State University, Extension Bulletin E-643.

ADDENDUM: CURRENT STATE AND FEDERAL LAWS

Michigan Public Act 70 of 1877, as amended, MCL752.21--Whoever overdrives, overloads, overdrives when overloaded, overworks, tortures, torments, deprives of necessary sustenance, cruelly beats, mutilates, or cruelly kills, or causes or procures to be so overdrive, overloaded, driver when overloaded, overworked, tortured, torments, deprived of necessary sustenance, cruelly beaten, mutilated, or cruelly killed, any animal, and whoever, having the charge or custody of any animal, either as owner or otherwise,

SPECIFIC REFERENCES

Cruelty to Animals, Michigan Public Act 70 of 1877, MCL752.21-752.30.

Horse Riding Stables and Sale Barns, Michigan Public Act 93 of 1974, MCL287.111-287.119.

Animal Industry Act, Michigan Public Act 466 of 1988 as amended, MCL287.701-287.747.

Michigan Penal Code (Excerpts), Michigan Public Act 328 of 1931, as amended, MCL750.49-750.70.

The Horse Protection Act, Code of Federal Regulations, Title 9, Chapter I, Subchapter A, Part II.

environmental needs of newborns; and special requirements at weaning. Information from veterinarians, experienced individuals and/or reliable published sources can be valuable (see references).

Transportation: Transporting cervidae successfully requires specific attention to several important details. Cervids should be separated according to species, age, and sex when handling or transporting. Quiet handling and darkened transport crates or trailers tend to enhance outcomes.

Adequate ventilation is required, and confinement during transport for over 12 hours necessitates provision of feed and water. Extra caution should be exercised in transporting the following cervidae and should be done only when the cervidae welfare is at stake: 1) males with antlers in velvet; 2) females due to give birth within two months; and 3) lactating females and offspring when those fawns/calves are less than one month of age. Finally, transportation of cervidae should be avoided in extremely hot weather to minimize associated stress.

RECOMMENDATIONS FOR THE ENVIRONMENT

Farmed cervidae can be successfully raised under a wide variety of systems. Their environmental needs vary from those of major livestock species based mainly on their behavioral differences. Accordingly, requirements often differ among individual cervidae species. For example, paddock size and stocking density should be determined by species preference toward social and gregarious behavior, and the relative proportions of open pasture and forested land should be based on species preference for browsing vs. grazing. Cervidae must become habituated to their environment, and disruptions by people, other animals, or machines should be minimized. Newborn cervidae require cover for hiding and shelter from inclement weather in some situations. Though most cervidae are quite tolerant of climatic fluctuations, provision of shelter to temper climatic extremes can be beneficial. As with other aspects of cervidae farming, environmental design should utilize expert input.

FACILITIES AND EQUIPMENT

For the most part, the facilities and equipment needed for cervidae farming are dictated by the requirements in handling, nutrition, reproduction, transportation, and environment. Fences should be tall enough to avert jumping by the species of interest, and sharp protrusions in the confined areas should be strictly eliminated.

HEALTH CARE AND MEDICAL PROCEDURES

In managing the health of farmed cervidae, aggressive prevention of disease and injury is much preferred to treatment. Reliable success with both prevention and treatment is more likely if a veterinarian skilled in cervidae management is involved. Adherence to regulatory requirements must be observed in the transport and transfer of cervidae.

GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR VEAL

MANAGEMENT OVERVIEW

Most veal comes from dairy calves. Four classes of veal are now recognized in the United States: Bob veal, grass-fed veal, heavy or Western veal, and formula-fed veal (also known as milk-fed or special-fed) (Schwartz, 1990). Formula-fed veal is the most common in Michigan and these recommendations will be specific to this type.

MANAGEMENT PRACTICES

Veal calves should be handled with special care, gentleness, and patience, a recommended management practice for all dairy calves. Until they are selected for veal production systems, they should receive the same husbandry practices as dairy replacement heifers. Young dairy animals not intended for dairy herd replacements or formula-fed veal, should follow the beef management recommendations.

It is recommended that veal producers observe calves several times a day. The herds person should monitor the feed intake and health of each calf (Guide for the Care and Production of Veal Calves).

Individual stall housing is a management recommendation for formula-fed veal production to minimize calf-to-calf contact which limits the spread of infectious diseases (Guide for the Care and Production of Veal Calves). This management practice is important, considering that veal calves are usually grouped together from many dairy farms, and the calves may have been exposed to disease at the collecting facilities.

Diets should be formulated to meet nutrient requirements for both maintenance and growth (NRC, 2001). Feeding calves individually assures that competition among animals does not result in some animals receiving insufficient quantities of feed. More efficient growth results because the farmer can feed calves differently, depending on weight, appetite, and individual calf differences.

Veal facilities should be equipped for ease of loading, unloading and transporting of calves (Modern Veal Production). Animal well-being is an important consideration during transport regarding space requirements and duration of trip.

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Guide for the Care and Use of Agricultural Animals in Agriculture Research and Teaching. 1988. Consortium for Developing a Guide for the Care and Use of Agricultural Animals in Agriculture Research and Teaching. pp 55-57.

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Raising Dairy Heifers for More Profit. 1987. A Management Seminar for Dairy Farmers, Michigan State University Extension.

The Politics of Formula-fed Veal Calf Production. 1990. Journal of American Veterinarian Medical Association. 196: 1578-1586. A. Schwartz.

Guide for the Care and Production of Veal Calves - American Veal Association 1994.

Continuous access to clean fresh water is important for lactating ewes and lambs on high grain diets. In a large flock, this may mean multiple access points in a confinement operation. Sheep with lower water requirements do not need continuous access to water.

Sheep that are raising lambs housed in a barn in the winter require a high level of stockmanship. Prolific sheep will raise the required level of stockmanship even further. Goats are seasonal breeders like sheep. Generally the angora flocks are kept under pastoral conditions, whereas the dairy herds are handled in a more confined way, and fed on stored feeds.

Transportation of sheep and goats should be handled with regard to climatic conditions and productive stage of the animals. Care should be exercised in the transport of animals during conditions of high temperature and humidity. Appropriate measures should be taken to reduce the risk of pregnancy toxemia and transport tetany when moving sheep and goats. An adequate supply of nutrients immediately prior to transport is helpful in reducing hypocalcemia or transport tetany of sheep. Excitable animals should be gated-off into groups to prevent pile-ups and death losses.

RECOMMENDATIONS FOR THE ENVIRONMENT

Sheep and goats in Michigan should receive protection from the winter climate through some kind of shelter, usually a building, although woodlots which reduce wind speed may be appropriate. Provision of extra feed and protection from wind and precipitation is necessary if animals are in danger of experiencing hypothermy. In intensive production facilities, ventilation should prevent moisture condensation during cold weather and excessively high temperature during hot weather. Shearing of sheep reduces the moisture load during winter housing. Newly shorn sheep are susceptible to hypothermy, hyperthermy, and sunburn, so appropriate shelter may need to be provided and frequency of observation increased.

Newborn lambs and kids are very susceptible to hypothermy, and they should be moved to areas within their respective thermoneutral zones as soon as possible. A draft-free environment should be provided during very cold or wet conditions. Zone heat may be used short term in extreme conditions or for weak lambs. When shelter is not available, lambing and kidding dates should be planned to minimize the possibility of subjecting newborn lambs and kids to cold or wet weather.

FACILITIES AND EQUIPMENT

Pastures should be fenced to minimize predator entry and reduce escapes and entrapment of horned or heavily fleeced animals in the fence itself. Innovations in fencing have made this task easier. Dry lots should be of sufficient size and well drained to prevent excessive mud during times of prolonged rainfall.

carried out by skilled personnel, while the animals are still small, preferably during the first week. This should not be done on the first day of life, as this may interfere with colostrum intake. Adequate colostrum intake is important for disease resistance in young animals.

Animals that are lame should be treated promptly to minimize pain or distress. Foot rot is a contagious disease that is endemic in many flocks. There are sound economic and welfare reasons why foot rot eradication should be carried out. Recognition should be given to the fact that certain sheep and goat diseases are potentially transmissible to people, and appropriate precautions should be taken. Animals that are suffering and/or dying should be treated or killed humanely. All carcasses should be disposed of promptly and in accordance with state and local regulations.

REFERENCES

American Sheep Industry Association. 2002. Sheep Production Handbook. Englewood, CO.

Midwest Plan Service. 1994. Sheep Housing and Equipment Handbook. 4th Edition, Midwest Plan Service, Iowa State Univ., Ames, Iowa.

National Research Council. 1981. Nutrient Requirements of Goats. National Academy Press, Washington, DC.

National Research Council. 1985. Nutrient Requirements of Sheep. Sixth Rev. Ed. National Academy Press, Washington, D.C..

Transportation: Safety and comfort of the animals are of prime importance when transporting poultry. Poultry in transit should be provided with proper ventilation for the conditions; clean, sanitized vehicles and equipment; and a floor surface that minimizes slipping.

Chick delivery: The day-old chick delivery vehicle should have the capability of maintaining a uniform temperature of 75°F (24°C) to 80°F (27°C) regardless of ambient temperature. Air circulation must be maintained around all chick boxes at all times regardless of their location in the vehicle. The vehicle should not stop from the time it is loaded until it reaches its destination. Provisions for maintenance of proper ventilation and temperature control should be provided in case of vehicle's mechanical failure or any other unforeseen vehicle stop(s). The transportation vehicle should be properly cleaned and sanitized between deliveries.

Adult poultry delivery: When adult poultry are transported, adequate ventilation, space and flooring should be provided. Hot weather is a time for particular caution. The birds should be protected from heat stress by being shaded and/or moved during the dark hours. Prompt unloading and/or auxiliary ventilation is essential when the birds reach their destination.

During transportation in cold weather, birds should be protected by use of windbreaks, partial covering, etc. Ventilation must always be adequate.

RECOMMENDATIONS FOR ENVIRONMENT

Ventilation and Lighting: Ventilation in the layer house should provide a healthy level of moisture, gases and temperature maintained without drafts or dead air pockets.

Lighting should be provided to allow effective inspection of all the birds and sufficient light for the birds to eat and drink. Light intensity within the house should average between 0.125 and 1.0 foot candle during the daily light period.

The housing should provide shelter from disturbing noises, strong vibrations, or unusual stimuli, regardless of origin.

FACILITIES AND EQUIPMENT

Housing: The design, construction and management of a poultry housing system must meet the birds' need for shelter against undesirable environmental conditions such as extreme cold, excessive heat, rain and wind and modify these climatic conditions to conform to an adequate environment for laying hens. They shall be constructed to

GENERALLY ACCEPTED AGRICULTURE AND MANAGEMENT PRACTICES FOR DOMESTIC RABBITS

MANAGEMENT OVERVIEW

Rabbits are raised for research, meat, wool, pelts, show, pets, and as a hobby. They are maintained under a wide variety of conditions ranging from single backyard hutches to large environment-controlled commercial production units. Rabbits are adaptable to a wide range of housing and management systems provided their needs for shelter, nutrition and health care are met.

If rabbits are raised and sold for laboratory use, they must be raised according to the provisions of the Animal Welfare Act. Rabbitries producing rabbits for laboratory use must also be licensed by the U.S. Department of Agriculture.

MANAGEMENT PRACTICES (INCLUDING TRANSPORTATION)

Nutrition: Rabbits must be fed a sufficient quantity of wholesome, palatable feed to meet their nutrient requirements. Each pen should be provided with suitable feed receptacles (typically a crock or metal feeder and a hay manger if loose hay is fed) to allow easy access to uncontaminated feed.

Rabbits must have access to clean, fresh water daily. Water receptacles (crops, water bottles, etc.) or automatic waterers may be used. Frequent watering or use of heating systems should be employed to assure that an adequate supply of drinking water is available to the animals during freezing temperatures.

Handling and Transportation: Proper handling of rabbits will help prevent injury to the animals, as well as to the handlers. Recommended methods for handling and examining rabbits are given in **Rabbit Production** and in the **Domestic Rabbit Guide**.

The safety and comfort of the animals are of prime importance when transporting rabbits. Wire carrying cages are recommended for transporting rabbits. Carrying cages should be of sufficient size to allow the rabbits to turn about freely and make normal postural adjustments. Carrying cages with wire (1/2" x 1") floors suspended above solid bottoms are recommended. Cat carriers are not recommended for transporting rabbits, as rabbits could be injured when removing them from the carrier. Rabbits should be provided with a non-toxic absorbent bedding material to prevent leakage in transit.

Rabbits being transported should be observed frequently and should have access to feed and water (or feed that will satisfy their water needs) if in transit for more than 6 hours. During hot weather, precautions should be taken to guard against heat stress.

(plaster board) for a resting place and to help eliminate foot problems. Solid floored pens should be provided with clean, dry litter and should be cleaned frequently. Household bleach and sunshine are effective disinfectants.

Bred does should be provided with an adequate sized nestbox in which to raise their young for the first month. The nest box should contain a suitable bedding material and should be placed in the pen a few days prior to kindling. Various types of bedding, including straw, wood chips, crushed/shredded sugar cane, sawdust, and newspaper, can be used. Nest boxes may be constructed of wood, metal, or wire. Disposable liners should be used with wire nest boxes. In non-heated rabbitries during cold weather, well insulated nest boxes should be provided or the does should be moved to a warm area to kindle and raise their litters for the first few weeks. Good nest box sanitation is essential.

HEALTH CARE AND MEDICAL PROCEDURES

Optimal management practices are essential to maintain good health status in the rabbitry. A program of disease prevention and control should be established and may include consultation with a veterinarian. Rabbit breeders should be on the look out for signs of illness. Any sick or injured animals should be immediately treated, or if necessary, humanely euthanized. Rabbits that are under quarantine or suspected of having an infectious disease should be separated from other rabbits to minimize the spread of disease.

Euthanasia: Euthanasia should be carried out by trained personnel as rapidly and painlessly as possible. Acceptable procedures for euthanizing rabbits include those in the report of the AVMA Panel on Euthanasia.

REFERENCES

MANAGEMENT OVERVIEW

Animal Welfare Act, 1966. The Act of August 24, 1966 (Public Law 89-544) commonly known as the Laboratory Animal Welfare Act, as amended by the Act of December 24, 1970 (Public Law 91-579), the Animal Welfare Act of 1970, the Health Research Extension Act of 1985.

MANAGEMENT PRACTICES (INCLUDING TRANSPORTATION)

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GENERALLY ACCEPTED AGRICULTURE AND MANAGEMENT PRACTICES FOR FARM-RAISED MINK AND FOX

MANAGEMENT OVERVIEW

The humane raising of mink or fox under farm conditions requires a thorough knowledge of the animals' life functions and a sincere sensitivity for their welfare. The mink or fox farmer must have sufficient competence and financial resources to supply adequate facilities and care to accommodate the animals' needs, including proper housing, nutrition, and health care, with a minimum of stress to the animals.

These Generally Accepted Agricultural and Management Practices (Practices) for the care of farm-raised mink and fox were compiled primarily from the **Standard Guidelines for Operation of Mink Farms in the United States** and the **Standard Guidelines for the Operation of Fox Farms in the United States**. These standard Practices were developed by the **Fur Commission U.S.A.** and adopted by the mink and fox farming industries to promote sound husbandry and humane treatment of these animals in accordance with current accepted moral and ethical standards.

MANAGEMENT PRACTICES (INCLUDING TRANSPORTATION)

Nutrition: Mink and fox should be fed a complete and wholesome dry food or a conventional "wet" diet. The diet should meet the nutrient requirements of the animals. Feed should be provided to the animals in suitable containers that will allow them easy access to a clean, fresh diet. Each pen should be supplied with a fresh, clean source of drinking water that is available to the animals ad libitum. Ready access to potable water is particularly important to animals fed dry diets and during extremely warm weather and periods of freezing temperatures.

Handling and Transportation: Precautions must be taken when handling mink and fox to prevent injury to the animals and the handler. Mink are routinely handled with heavy leather gloves, while fox are most commonly handled with metal tongs.

Transportation of mink and fox requires special attention to size and strength of traveling crates and care of the animals in transit. Detailed recommendations for transportation of mink and fox have been published by the Fur Commission U.S.A.

RECOMMENDATIONS FOR ENVIRONMENT

Mink and fox farmers should establish effective hygiene and sanitation programs. These programs should include effective vermin (insects, ectoparasites, and avian and mammalian pests) control, removal of manure from under pens, routine inspection and cleaning of cages, nest boxes, and feeding and watering equipment.

HEALTH CARE AND MEDICAL PROCEDURES

A program of disease prevention and control should be established. Mink and fox farmers should be aware of the well being of their animals and should develop the ability to detect signs of illness, such as lethargy, abnormal behavior, change in appetite, abnormal feces, etc. All mink and fox should be observed at least once a day. Any sick or injured animals should be immediately treated or, if necessary, humanely euthanized.

Mink should be vaccinated against botulism, distemper, virus enteritis, and pseudomonas pneumonia and screened periodically for Aleutian disease. Fox should be immunized against encephalitis and distemper and periodically treated to prevent or eliminate internal and external parasites. In the event of a disease outbreak, the farmer should contact a veterinarian immediately, quarantine the affected animals if the disease is infectious, and implement a program to eliminate the disease.

Euthanasia: It is important that mink and fox farmers utilize humane techniques for euthanasia of their animals. The animals should be dispatched as quickly and painlessly as possible. The Fur Commission U.S.A. recommends acceptable procedures for euthanasia of mink and fox that are identified in the report of the AVMA Panel on Euthanasia.

REFERENCES

MANAGEMENT OVERVIEW

Fur Commission U.S.A., 1997. Standard Guidelines for the Operation of Mink Farms in the United States (6th ed.). Fur Commission U.S.A., St. Paul, MN, 15 pp.

Fur Commission U.S.A. 1997. Standard Guidelines for Operation of Fox Farms in the United States. Fur Commission U.S.A., St. Paul, MN, 16 pp.

MANAGEMENT PRACTICES (INCLUDING TRANSPORTATION)

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GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR AQUACULTURE SPECIES

MANAGEMENT OVERVIEW

Michigan aquaculturists are composed mainly of small firms concentrating on trout production which includes a mixture of dressed fish, fee-fishing, and planting stock sales. People involved in commercial game fish production or fee-fishing operations are required to obtain an aquaculture registration from the Michigan Department of Agriculture. People involved in production of fishes for stocking public waters shall also obtain a permit from the Michigan Department of Natural Resources. Five firms produce over 50% of the approximately 1.65 million pounds (750,000 kg) of fish produced annually with a market value of approximately 2.5 million dollars. In addition to the Michigan game fish breeders, there are bait fish operators and a carp farm. Because of the diversity of aquaculture species approved for aquaculture production and the variety of husbandry systems used, recommendations for their care must be general in nature.

MANAGEMENT PRACTICES

Stock Procurement: An established list of approved species for aquaculture production is contained in the Michigan Aquaculture Development Act (Act No. 199, Public Acts 1996, 286.875, Section 5(2)). Only aquaculture species on the approved list are allowed for purposes of aquaculture production.

Aquaculture species should be obtained from a source with a history of freedom from disease. Salmonids of all life stages obtained from an out-of-state hatchery must be certified as being free of certain diseases.

Newly acquired aquaculture species should be checked to determine that they are in good condition, regardless of the availability of health history information. Healthy aquaculture species should show good coloration with no obvious abrasions or lesions. For fish, opercula should completely cover the gills and not stand out from the head. Aquaculture species should appear alert and actively interested in feed, with no tendency to gather at the inlets or outlets to the tanks or ponds. There should be no evidence of dead animals at the sides or on the bottom of the transport tanks. Uniform size is indicative of good management and may be important to avoid cannibalism in some species.

It is illegal to import and stock grass carp or white amur (Ctenopharyngodon idellum), Japanese weatherfish (Misgurnus anguillicadatus), ide (Leuciscus idus), rudd (Scardinius erythrophthalmus), bitterling (Rhodeus sericeus), and tench (Tinca tinca) into Michigan without permission from the Director of the MDNR.

Handling: Handling should be minimized to reduce stress and damage to the skin leading to bacterial and fungal disease. Nets and other materials for handling aquaculture species should generally be soft to reduce damage and should be sanitized before and after use to reduce disease transfer.

Nutrition: Active feeding is often a good indicator of the health status of aquaculture species. Sick animals often quit eating before other disease signs become noticeable. Commercially prepared pellets are available for a variety of aquaculture species which are often acceptable to other similar species. Live feeds may be required for rearing some species of aquaculture species; however, live feeds may not meet the nutritional needs of the aquaculture species unless multiple species of feed items are used.

Optimum feeding rates vary depending on species, size, feed composition, water temperature, and desired growth response (maintenance vs. maximum growth rate). Feeding tables have been developed for some aquaculture species which can be used for general care recommendations. Feeding once or twice a day for the five working days is usually adequate; however, larval stages and young animals may require more frequent feedings which should extend throughout the entire week. Feeding by hand may be preferable to use of automatic feeders since it encourages frequent inspection of the aquaculture species and early detection of problems.

RECOMMENDATIONS FOR THE ENVIRONMENT

An ample and dependable supply of high quality water is an indispensable qualification for keeping aquaculture species. Aquaculture species are in constant, intimate contact with their aquatic environment and even minor changes in water quality may cause stress that predispose them to disease. Chemical, physical and biological factors in the water environment will affect different aquaculture species in different ways.

Water temperature is probably the single most important environmental factor. Aquaculture species are, with a very few exceptions, unable to physiologically control their body temperature. Most body functions, such as rate of growth, appetite, respiration and heart rate, are temperature-dependent. Each aquaculture species has a preferred temperature that is affected by its acclimation temperature. In general, the preferred temperature range for coldwater fishes is 46-60°F, for coolwater fishes is 60-68°F, for warm water fishes is 64-72°F, and for tropical fishes is 73-86°F. Temperatures outside these ranges may, however, prove perfectly acceptable, depending on the species and other variables involved. Although most aquaculture species can be gradually acclimated to tolerate temperature extremes, the temperature that promotes growth and reproduction should be considered the optimum rearing temperature.

The acclimation of aquaculture species to a new temperature, either when introducing new animals to a facility or when adjusting temperatures within a facility, should proceed as gradually as possible. Change should probably not be greater than one degree Fahrenheit per hour and should be even more gradual at the extremes. Carefully observe the aquaculture species for two weeks after transport and/or handling for signs of stress

and incorporated in the designs of systems to meet specific needs of the aquaculture species and production system.

HEALTH CARE AND MEDICAL PROCEDURES

Stressors, such as changes in water quality or handling, may predispose aquaculture species to disease. Diseases can be treated and controlled, however, success in the handling of health problems requires that expert advice be sought. The earliest signs of disease are usually changes in behavior. For example, aquaculture species may aggregate at the inflow if O_2 levels are too low. Conversely, they may accumulate at the outflow of the tank, if a toxic substance is present in the inflow. Sick animals usually lose their appetite. Certain conditions may cause animals to whirl or spiral in the water or, in the case of some external parasites, show their irritation by "flicking" themselves off the sides or bottom of the tank. Individuals that become sickly usually separate from the group and will frequently be found at the sides of tanks; and they will also prove less active in their response to stimuli.

Various changes in appearance also signal disease problems. Sick aquaculture species often change color. For example, fishes may become darker or lighter if infected with bacteremias. Diseases that specifically affect the gills often elicit an excessive production of mucus which may be seen streaming out from the opercula. Skin diseases may also cause an excessive mucus layer to accumulate which may become visible as a gray sheet on the skin surface. In the case of some fungal infections, a gray cotton-wool-like mat can be seen on the affected area. Fungi are frequent secondary invaders on virtually any skin or fin lesion, regardless of its primary cause.

Very often parasites and microorganisms that have the potential to cause disease may be isolated from diseased aquaculture species, but are later found to be incidental and unrelated to the actual cause of the disease. At other times, it may be possible to identify or isolate a disease causing agent from an obviously sick animal. Under these circumstances, a full evaluation of all the information available from hematology, histopathology, biochemistry and microbiology, will be required if an accurate diagnosis is to be achieved. However, an accurate diagnosis is essential for appropriate treatment and control. An experienced diagnostic aquaculture species pathologist should be consulted when a disease problem arises.

The treatment of external parasitic, fungal, or bacterial disease includes the use of baths, flushes and dips with chemicals specifically approved for use with that specific aquaculture species. Treatment of some systemic diseases may require therapeutic agents administered in the feed to those animals still feeding. Such agents may act both externally and internally, being absorbed from the water.

GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR BROILERS, TURKEYS, AND GAMEBIRDS

MANAGEMENT OVERVIEW

There are approximately 4.5 million commercial turkeys and less than one-half million commercial gamebirds in the state of Michigan. There are no commercial broiler chickens produced in Michigan. Commercial housing varies considerably from location to location. In addition, there are several thousand hobby and backyard flocks which utilize a wide variety of free range and/or confinement shelters and housing.

These Generally Accepted Agricultural and Management Practices (Practices) are intended to assist the broiler, turkey, and gamebird producer in attaining and maintaining a high quality of bird comfort and well-being in broiler, turkey, and gamebird production facilities and will focus on the birds' basic requirements.

MANAGEMENT PRACTICES (INCLUDING TRANSPORTATION)

Nutrition: Feed and clean water should be available to the birds at all times and when new birds are placed in the system, care must be taken to ensure that the birds find the feed and water sources. In situations where high environmental temperatures can be encountered, additional water space per bird is recommended.

Beak trimming and specs: Due to the temperament of chickens, turkeys, and gamebirds toward feather picking, fighting and cannibalism, the beaks of birds can be trimmed to remove their sharp tips as an aid in prevention of these actions. Trimming should be done by properly trained workers and should be done at the prescribed times, generally at the hatchery. In addition, specs or blinders, may be attached to the beak of the bird so that the birds can see to the right or left, but not straight ahead. This should be done by properly trained workers and should be done when the birds are of sufficient age to readily find the feed, water and other visual environmental necessities.

Toe trimming: Due to the tendency of turkeys to inflict bodily damage upon each other with their toenails in confinement situations, one or more toenails (generally the inside and middle toes on both feet) may be removed. Toe trimming (or declawing) should be done by properly trained workers and is generally done at the hatchery.

Transportation: Safety and comfort of the animals are of prime importance when transporting live poultry and gamebirds. When poultry and gamebirds are transported, they should be provided with proper ventilation for the conditions, and clean sanitized vehicles and equipment.

and optimize the principles of disease prevention. The housing should also protect the birds from all forms of predators and allow for daily visual inspection and care.

Broilers: Brooding and growing space requirements and water and feeder space should conform to the general needs as outlined in the particular broiler company's management guide, e.g. Cobb's Broiler Manual (1984).

Turkeys: Brooding and growing space allowances and feeder and water space for turkeys should conform to the general needs as outlined by Berg and Halvorson (1985).

Gamebirds: Brooding and growing space allowances and feeder and water space for gamebirds should conform to the general needs as outlined by Flegal and Sheppard (1981) and Eleazer et. al., (1990).

Litter: Many different types of litter can be used. All litter must be dry and of acceptable quality. It is acceptable to reuse litter for several successive flocks as long as ammonia and insects are controlled and there has been no disease outbreak.

HEALTH CARE AND MEDICAL PROCEDURES

Optimal management practices are essential to maintain good health status in the production facilities and may be in consultation with a veterinarian. A program of disease prevention and control should be established. Only federally approved medications and vaccines shall be used, following label directions in accordance with state and federal regulations.

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